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Photoshop
FIRST STEPS

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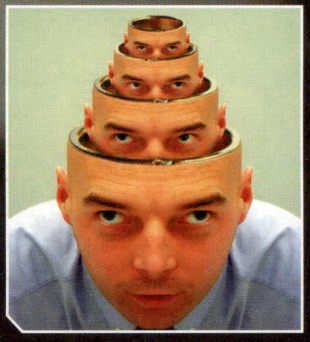

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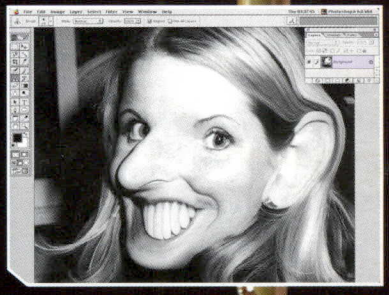

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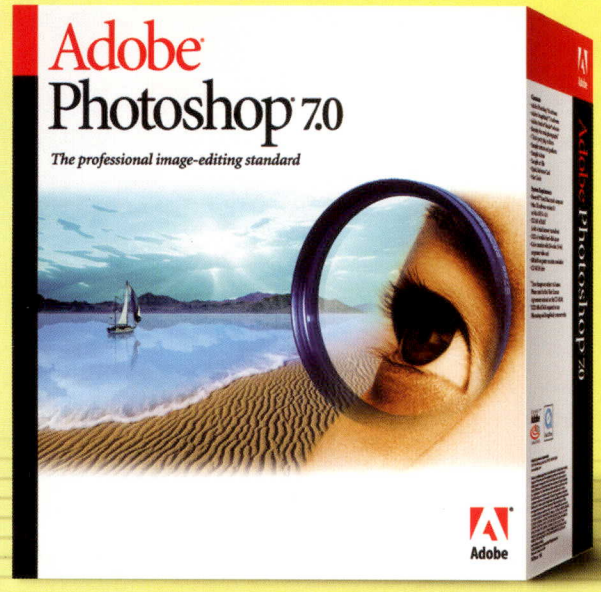

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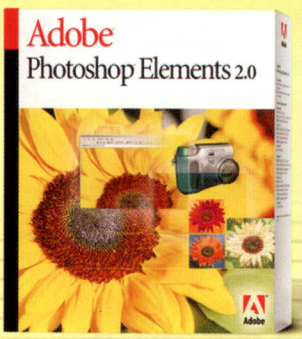

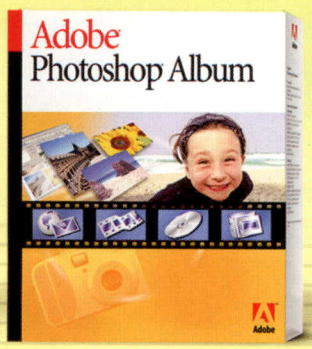

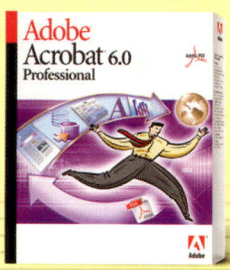

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BEGINHERE

Photoshop First Steps is your ideal guide to the world of photo creativity and image editing

MAGAZINE COVER Create this incredible image today in Photoshop!

Welcome to **Photoshop First Steps**, free with **Digital Camera Magazine**. Our first project is the superb image on the front of this issue! Try it out with our supplied files, then use the techniques to create your own individual image with your own photograph. The image uses a close-up shot of our model and two photos of masks, blended together to create the amazing effect you can see on the cover. Our second project is a great example of the surrealist's art, building a 'Russian Doll' effect with a man's head. It shows just what you can do with a couple of images and a large dose of imagination! Our third section has four One Page Expert walkthroughs, including a fun way to light up a friend's day, with our look at creating caricatures from photographs.

We hope you enjoy this issue of **Photoshop First Steps**. If you have any comments on the magazine or the individual projects, feel free to email me at editor.dcm@futurenet.co.uk. Similarly, if you create your own versions of these creative projects, we'd really like to see them! Enjoy!

Adam Evans, Editor
adam.evans@futurenet.co.uk

CHECK US OUT!

From basic image-editing techniques to advanced creative projects, Photoshop First Steps will show you how to create captivating images

STEP BY STEP
We'll show you how to create this stunning cover image from scratch

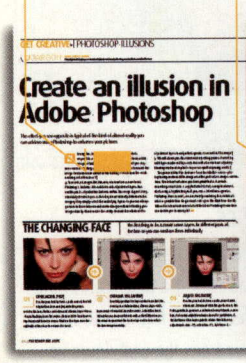
ON THE COVERDISC
All the files you need to make this image are on your packed coverdisc

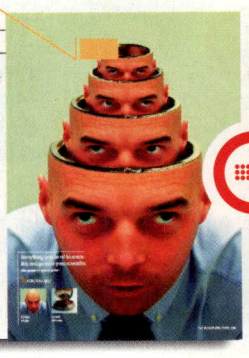
EASY AS ABC
You won't believe how easy this surreal project is to create. Try it now!

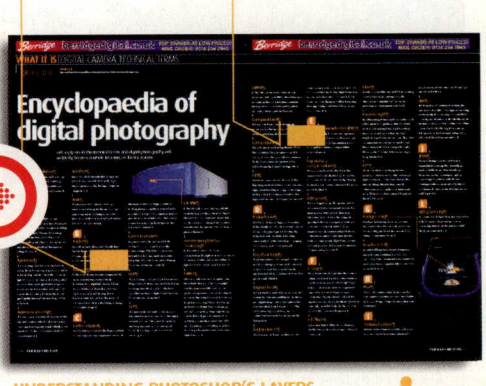
GET AHEAD
Why not try this project with a photograph of your wife or husband?

KNOWLEDGE BANK
Check out our in-depth encyclopaedia for all things related to digital cameras

ESSENTIAL RESOURCE
Be sure to keep this magazine – you never know when you'll need it!







UNDERSTANDING PHOTOSHOP'S LAYERS
Follow our guide to Photoshop's powerful Layer palette on **page 012**

JARGON: **WHAT YOU'LL LEARN**
This project will help you understand Adjustment Layers, Blending modes, Masks and the Pen tool

Create an illusion in Adobe Photoshop

The effect you see opposite is typical of the kind of altered reality you can achieve using Photoshop to enhance your pictures

Blurring the lines between what is real and what's impossible is the true power of Photoshop. Glance at the image of last month's covergirl (opposite) and you may see a woman holding a mask to her face. Look a little closer and the image becomes more surreal. Is she holding a mask or is the mask evolving out of her face?

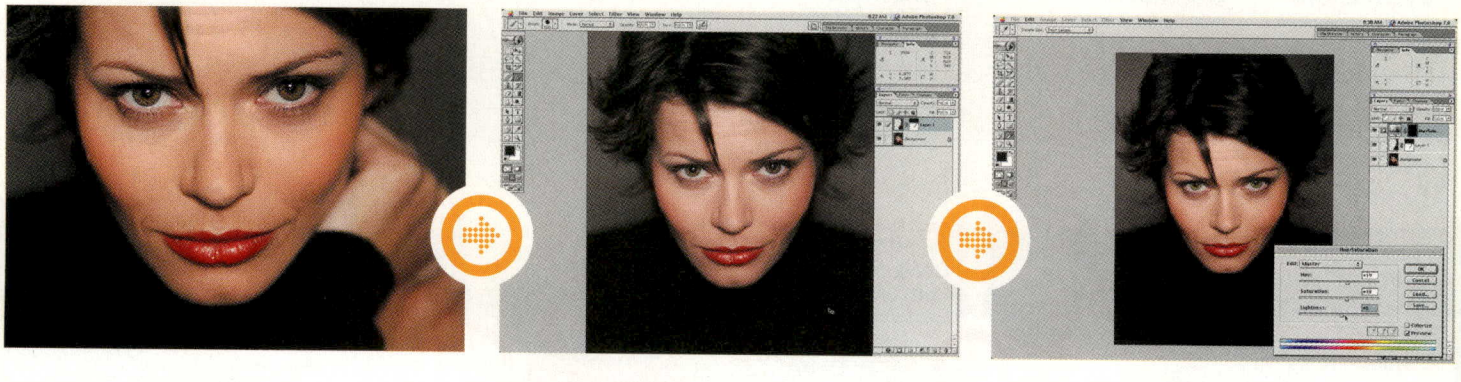
To create an image like this one, we must use a number of Photoshop's features. We will delve into adjustment layers that enable you to adjust colour balance within the image. A great thing about Adjustment layers is that they do not directly deteriorate the imagery, they simply affect the underlying layers. So you can always go back to them later on and make changes without affecting your images directly. There is also the ability to mask the effects of the adjustment layers to only affect specific areas within the image.

We will show you the inherent compositing power of working with layer masks and layer sets. You will also see how adjusting Blending modes of duplicate layers can yield surprising results.

The power of the Pen tool as a basis for selected areas – plus duplicating sections of the image on other parts of an image – saves time. This tutorial will show you how possible it is to create something surreal from a supplied model shot, a couple of mask shots using a Fujifilm Finepix s2 pro, and a bit of time spent in Photoshop. Bear in mind, we are merely scratching the surface of what is possible here. So go ahead and open the files from the CD, follow the tutorial and see what a little bit of Photoshop know how can enable you to accomplish.

THE CHANGING FACE

The first thing to do is create some Layers for different parts of the face so you can work on them individually



01 OPEN MODEL.PSD

Use the pen tool to draw a path around the left edge of her face and jaw, including areas outside the face. Make a selection and choose Layer➧New ➧Layer Via Copy from the menu. Choose Edit➧Transform➧ Flip Horizontal from the menu. Position the layer over the right side of her face to remove the hand.

02 OVERLAP THE LAYERS

Carefully position the layer contents so that the overlap is realistic looking. Choose layer➧Add layer mask➧Reveal All from the menu. Select the brush tool and use a large soft brush with a black fill colour on the mask to paint out the hard edge on her face where the two images overlap.

03 ADJUST THE IRISES

Use the pen tool to draw a path around each of her iris'. Command-click the path icon in the Paths palette to generate a selection from it. Create a new Hue/Saturation adjustment layer from the pull down at the bottom of the Layers palette. Make the following adjustments: hue:+19, saturation:+18, lightness:+6.

Everything you need to create this image is on your disc

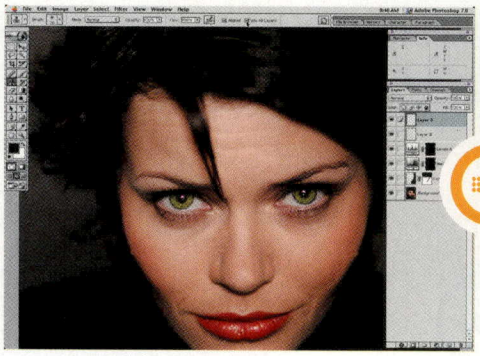
CDA/Tutorials/

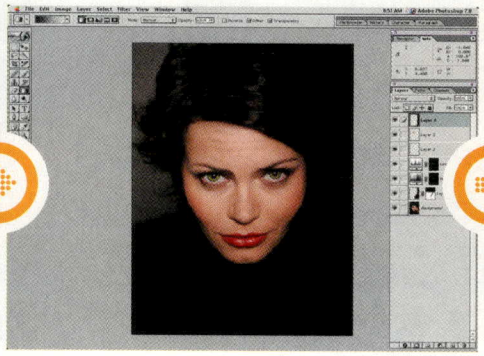
FACE
model.psd

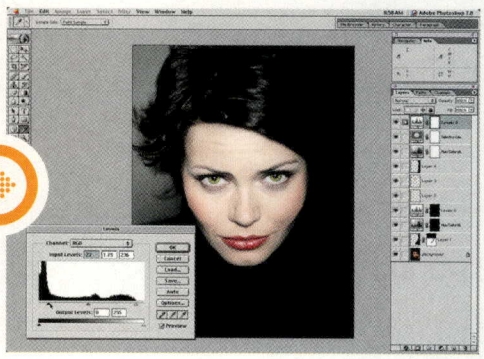
MASK
mask1.tif

MASK DETAIL
mask2.tif

JARGON: SATURATION
Strictly speaking, the degree of saturation of a colour is its purity. When we talk of saturation in image-editing we're talking about the a ount of colour (often a specific colour) in a photo, relative to the rest of the image







04 ADJUST INPUT LEVELS

Reload the same selection and create a levels adjustment layer. Adjust the input levels at: 9, 1.07, 230. Click 'Create a new layer' and select the Clone Stamp tool with the 'use all layers' function enabled.

05 DARKEN THE BACKGROUND

Sample skin and cover the stray hair. On a new layer use the linear gradient tool (foreground transparent), and a dark colour from the background to create a gradient to cover the background to the right.

06 CREATE A HUE/SATURATION LAYER

Do the above and desaturate by 26. Make a Selective Colour adjustment layer. Set at absolute, enter cyan 11, magenta 20, yellow 22, black 0. On a levels adjustment layer do input levels: 23, 1.15, 236.

07 OPEN MASK1.TIF

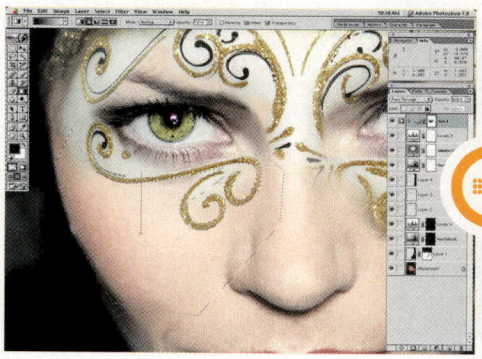
Generate a selection from the existing path then drag and drop into the working file. Choose Edit→Free Transform and position the mask on her face. Command-click the layer icon to make a selection.

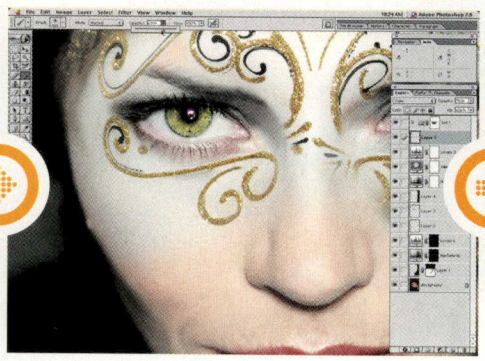
08 CREATE NEW ADJUSTMENT LAYER

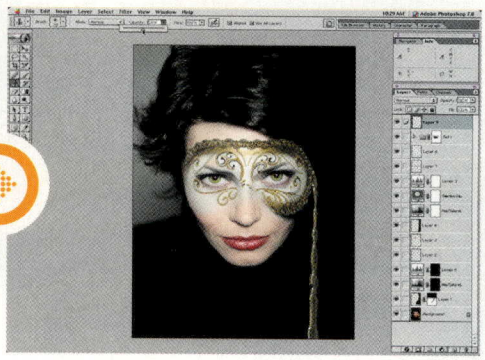
Adjust output to 65, 255. On the layer mask, set radial gradient black to transparent and mask out effect in all areas but lower left. Create new layer (multiply blending mode). Drag it below mask layer.

09 PAINT A SHADOW

Sample the dark background and paint a shadow under the right of the mask. Create a layer set and add the mask, the shadow and mask levels layer. Add a layer mask and softly blend the eyes.







10 BLEND THE LEFT CHEEK

With the pen tool draw a path on her lower left cheek. Don't include the ornate detail. Make a selection. Use the radial gradient tool inside the selection to blend this area into the face. Create new layer.

11 BLEND MASK TO SKIN

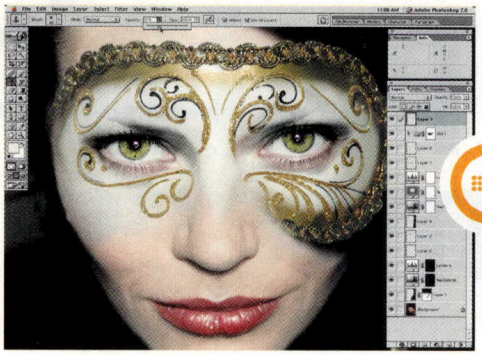
Move the layer below the set, change mode to colour, and reduce opacity to 75%. Sample grey from the mask and paint on the layer with varying opacity. Paint in areas where the mask blends into skin.

12 OPEN MASK2.TIF

Select the path and drag the selected area into your file. Place the arm to the right of the image. Create a new layer and move it to the top in the Layers palette, select clone stamp tool with opacity 50%.

TOOL SCHOOL

The Clone Stamp Tool is one of the most powerful and useful in Photoshop. Most image editors have a clone tool of some kind. Use it to copy areas of an image to wipe out blemishes, streetlamps, and just about anything else



13 BLEND THE EYEBROWS

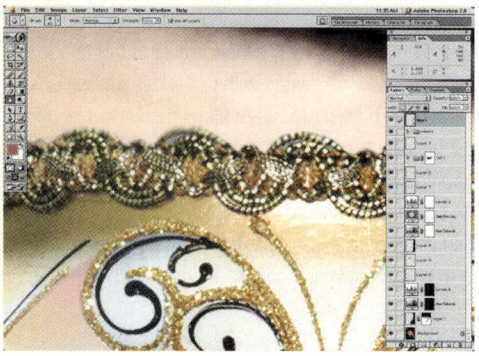
Sample the mask just over the eyebrow and clone this over both eyebrows, with opacity 25. With the clone stamp tool at 100% clone out the ornate details on the bridge of her nose, with a 25% setting.

14 PAINT THE SELECTIONS

Draw closed paths around the gold detail around the eyes. Make a selection from the paths and create a new layer with a Colour Blending mode. Paint the selections with large, soft brush.

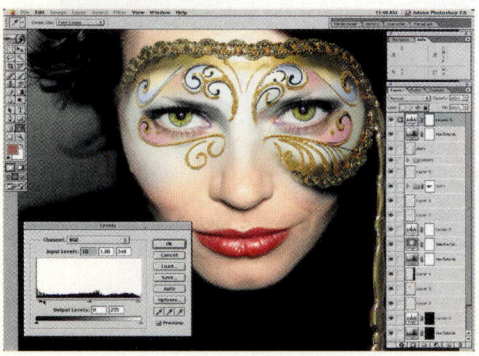
15 PAINT COLOUR LAYERS

Continue to paint colour layers on various selections. Don't be afraid to mix colours. Draw paths around the eyes and paint in 'eyeshadow'. Create a new layer set and add all the colour layers to it.



16 BLURRING

Create a new layer and select the blur tool. With strength set to 100 select a small soft brush and blur over all areas with sharp edges like where the mask overlaps her hair at the sides and so on.



17 ADJUST THE COLOUR

Create a Hue/Saturation adjustment layer and increase saturation by 22 to enhance colour. Create a new Levels Adjustment layer, adjust the sliders in the histogram until input reads: 10, 1.00, 248. Now save.

IN FOCUS | Time-saving techniques

18 *ADJUSTMENT LAYERS*

Adjustment layers are a great way to achieve effects like hue/saturation adjustments without destroying image quality. The beauty of the adjustment layers is that they employ traditional layer mask methods so that you can focus on specific areas of the image, without affecting others which you want.

FLIPPING LAYERS

Using what is readily available can save you hours of work in the long run. By creating a new layer out of a section of her face, flipping it, and moving it to the other side, we saved ourselves a lot of work painstakingly removing her hands and rebuilding her jawline.

LAYER SET MASKS

Adding layers to a set enables you to mask all of the included areas at the same time using a single layer set mask. It is also a good idea because the included layers still retain their own masks and can be edited independently of the layer set mask.

CLONE STAMP TOOL

Using the clone stamp tool on a new layer with all layers enabled is a fantastic way to clone out those unwanted areas.

SHADOWS

Doing things like adding shadows in will give your image a sense of realism. A shadow created properly will make added elements look like they belong in the scene so they don't look simply stuck on top of each other.

JARGON:

WHAT YOU'LL LEARN
This straightforward project will give you practice on cloning, using the free transform tool to manipulate images and using different selection techniques

Create a surreal portrait from only two images

Digital photo artist Barry Jackson returns to guide you through the surprisingly easy creation of another of his weird and wacky portraits

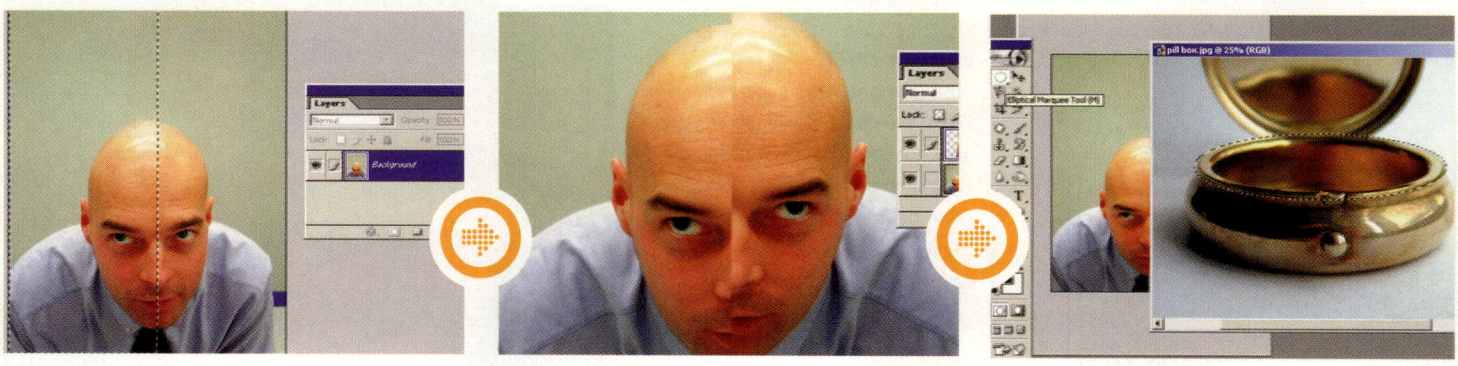
Back in issue 5 of **DCM** I showed you how to create a surreal portrait 'The Egg Man' by combining three separate images. For this shorter tutorial I will go one step further and guide you through the creation of an equally weird but surprisingly simple image that contains only two elements.

The inspiration for this image came from those wooden Russian dolls, which consist of numerous versions of the same doll in varying sizes, stacked inside eachother. Originally I wanted to use a full body image for this idea but as my friend Andy had proved such a good subject for the Egg Man image, I thought it'd be interesting to try it with a shot I already had of his head.

Both of the shots for this image were taken with a Fujifilm 6900z digital camera under natural lighting conditions. The pictures were then combined using Photoshop 7. Although Photoshop is my preferred image editor the extremely simple nature of this image means that it can be easily re-created with just about any available image editor. There are no layer masks or blend modes involved in this image, just basic tools and easy-to-follow techniques, so if you have always wanted to try your hand at manipulation but have been put off by long complicated tutorials then this might just be the one for you. All the files needed to re-create this image are included on the coverdisc, so why not give it a go?

BUILD A PICTURE

By merging duplicate layers and using some clever shadowing you can create the image opposite from just two digital photos



01 MAKE A SELECTION

Open the Man image from the coverdisc, make a duplicate layer and then use the rectangular marquee tool (M) to select the left side of the face as in the diagram. Right click on the selection and choose Layer via copy from the drop-down menu. This will place a copy of the selection on a new layer. Go to the Edit menu and choose Transform→Flip Horizontal.

02 MIRROR IMAGE

Use the move tool (V) to drag the layer over to the right of the picture and line up with the face to create a perfect mirror image. Merge with the background copy layer (Layer→Merge Down) and name it Head 1. Use the clone tool (S) to select areas of the face close to the join and clone over any obvious join line between the two sides of the face.

03 OPEN THE PILL BOX

Use the elliptical marquee tool (M) to select the open top of the pill box as in the diagram. To create the selection from the centre, hold down the Alt key as you drag the tool across the pill box. Select the move tool (V) and drag the selection from the pill box window and onto the head window, then position the selection over the head.

Everything you need to create this image is on your coverdisc

All images are © to Barry Jackson

CDA/Tutorials/

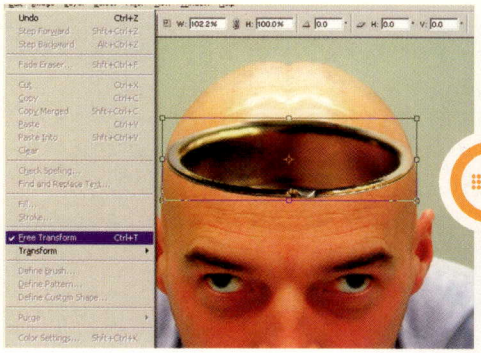
DETAIL
man.jpg

DETAIL
pill box.jpg

JARGON:

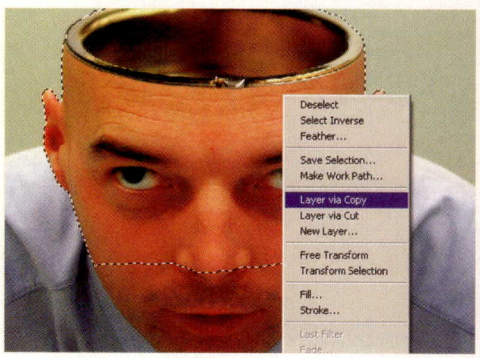
DEFRINGE
This command removes white fringing around a cut-out by sampling pixels just inside the radius and pushing them outwards to replace the existing pixels

CLONE TOOL
This tool enables you to sample part of an image and duplicate it elsewhere within the image



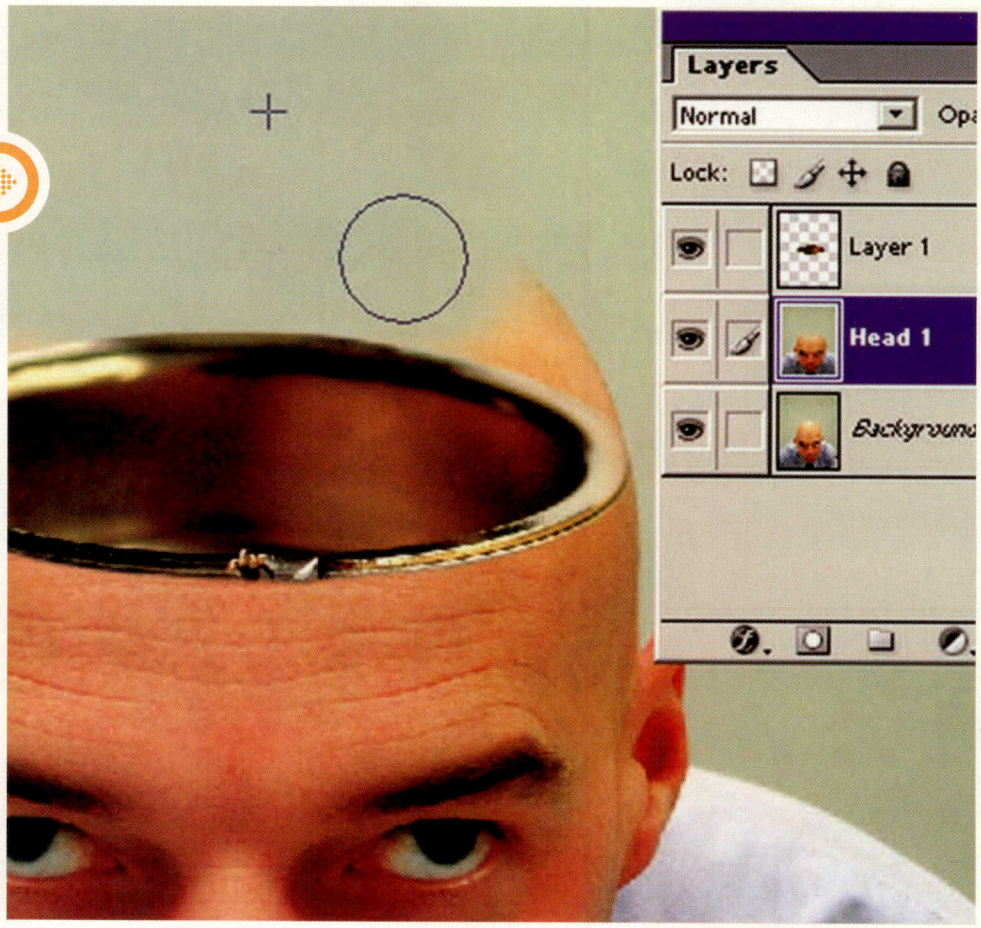
04 FREE TRANSFORM

From the Edit menu select Free Transform and squeeze the selection to fit the man's head. Double click Free Transform and select Layer➧Matting ➧Defringe and set the dialogue box to 1 pixel to soften.



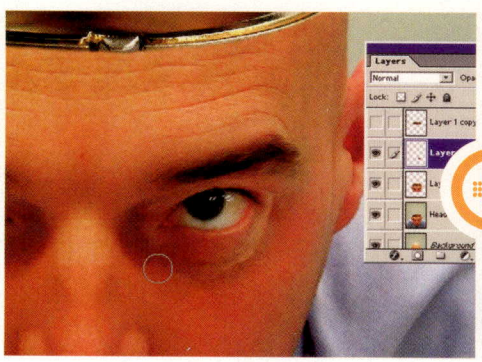
05 SELECT THE HEAD

Use the Magnetic Lasso tool (L) to select the area between the nose and the top of the head. Right click and choose Layer via copy from the drop down menu, select Layer➧Matting➧Defringe to soften.



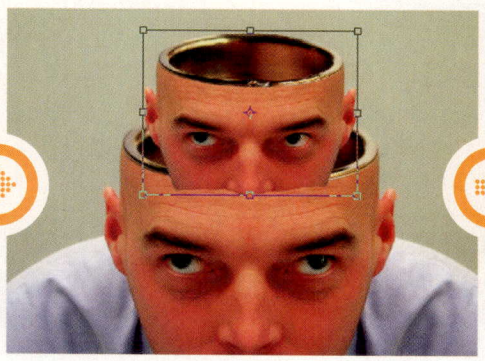
06 CLONE THE BACKGROUND

With the Head 1 layer selected, use a large, soft-edged clone stamp tool (S) to copy the green background over the top section of the man's head. When done, make sure that the pillbox layer is active before merging down with the Head 1 layer, (Layer➧Merge Down).



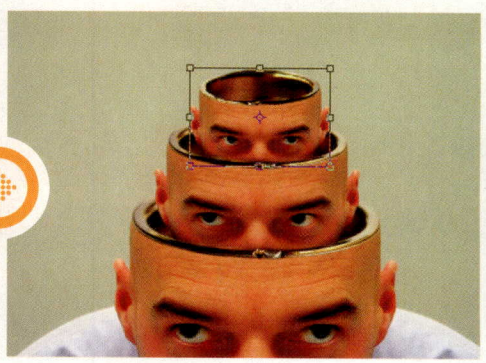
07 REPLACE THE RIGHT EYE

Use the Lasso tool on the original background layer to make a selection around the right eye and place it on the right eye of Head 1. Blend so the eye looks the opposite direction to Head 1, name it Head 2.



08 RESIZE AND POSITION

Use Free Transform to resize Head 2 and place above Head 1, reduce opacity of Head 2 by 50%; erase area covering Head 1. Set opacity to 100% and darken the lower part of the head (with Burn tool).



09 COPY AND FLIP

Duplicate Head 2, choose Transform➧Flip Horizontal, name it Head 3, use Free Transform to resize it above Head 2. Duplicate Head 1, name it Head 4, place it above Head 3. Flatten layers, adjust colour.

INFORMATION Recommended reading for this kind of Photoshop work is 'Digital Photography Special Effects' by Michael Freeman

IN FOCUS | Key stages

HORIZONTAL FLIPPING
The left side of the face was duplicated, then flipped horizontally and placed over the right side for a strange symmetrical effect. The two layers were merged and the join softened with clone tools.

FREE TRANSFORM
The top of an open pill box was then selected using the Elliptical Marquee tool, which was positioned over the top of the head, and resized to fit with the free transform tool in the Edit menu.

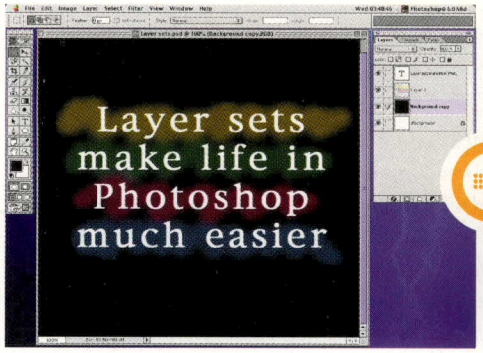
EYES RIGHT
The head was selected with the Magnetic Lasso tool and a copy made. The right eye of the original was pasted over the right eye of the copied head so that the heads looked in different direction.

COPIED HEADS
The second head was copied, flipped and resized, and a soft edged eraser used to erase the lower part of each head – giving the impression that each head was inside the head beneath it.

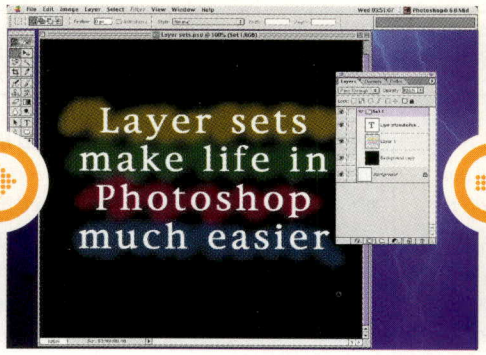
ADD SHADOW
Head 1 was copied and resized to fit inside Head 3. The burn tool added shadow to the lower parts of Heads 2, 3 and 4 – this added to the impression of the heads being inside each other.

LAYER SETS

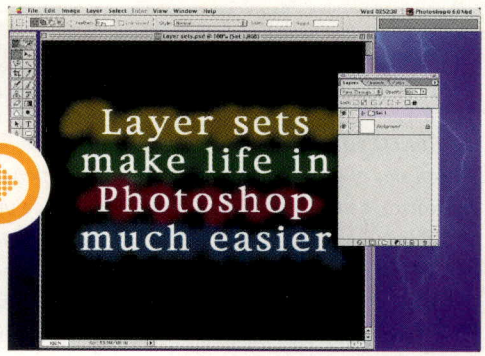
The Layers palette is the core of Photoshop and it's where you can leverage much of its power and flexibility. Sets are like folders in the Finder where you can group related Layers together



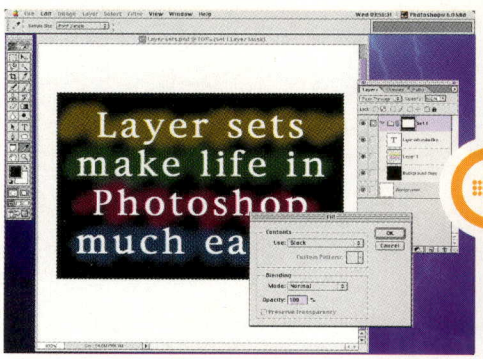
01 Layer Sets make life so much easier – a simple multi-layered Photoshop file can be simplified even more, and you can gain a lot more control by grouping the Layers into a set.



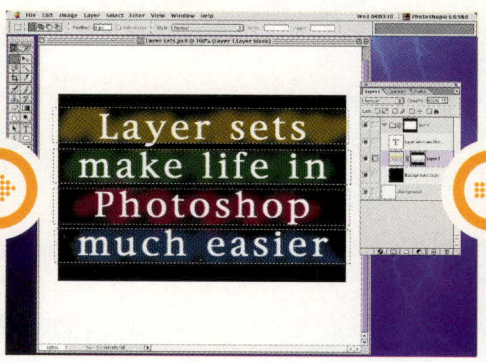
02 Click the New Set icon at the bottom of the Layers palette to add a new Layer, then drag each Layer (except the background) onto its folder icon.



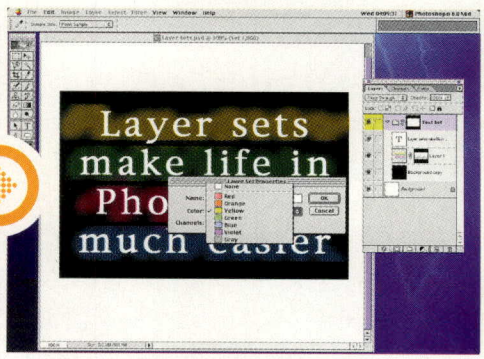
03 The Layers will indent in the palette showing they belong to the folder, and you can close the folder just as in the Finder to hide its contents.



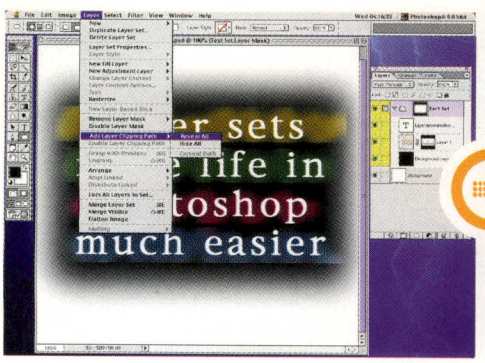
04 We can apply a Layer Mask to the set to affect all the layers in one go. Select the set then click the Layer Mask icon at the bottom of the palette. Draw a rectangular Marquee, choose Select ➔ Inverse to invert the selection, then fill it with black.



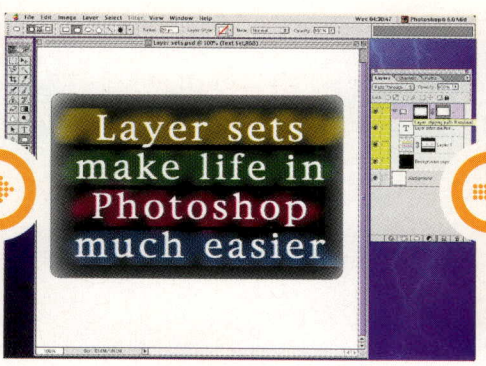
05 All three Layers are affected by the Mask, which saves time. We can still edit each of the Layers independently, and also add further Masks. Here we've drawn four selection Marquees (use S key to add to selections) for the colours Layer.



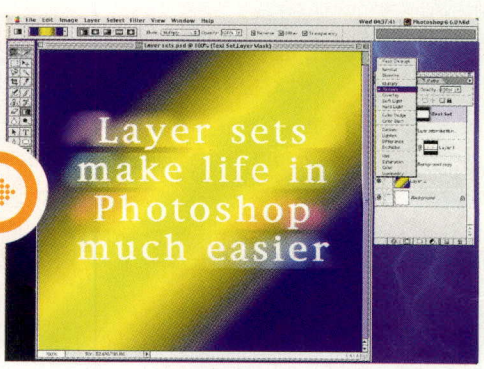
06 When you have more than one Layer set it helps to name them. Double click the set's name in the Layers palette to access its properties. Here you can rename the set and assign it a colour for quick identification.



07 Another improvement in the Layers feature is the capacity to use more than one mask at once. Select the initial Layer Mask and blur it. Then choose Add Layer Clipping Path ➔ Reveal All from the Layers menu.



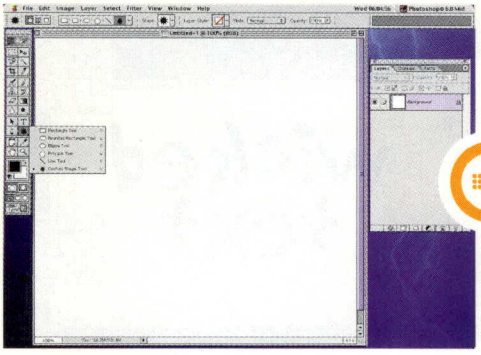
08 A second Mask appears in the set, but this is not a pixel-based Mask, it's a Vector Mask. Using the New Vector Shapes tool, choose the Rounded Rectangle and drag out the shape.

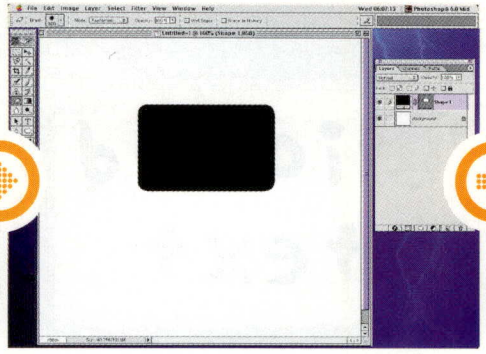


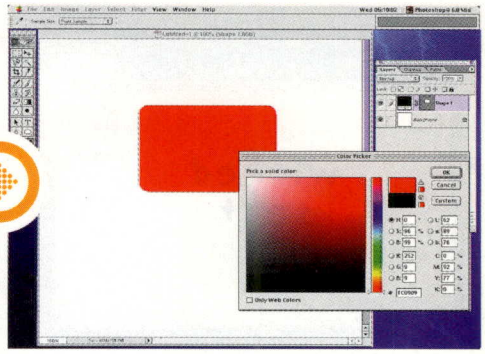
09 In the background Layer, create a coloured gradient. We can use the set's Blending modes to change the way all the contained Layers blend with the background. Here we've set it to Screen, but experiment with the different modes yourself.

VECTOR TOOLS

Together with Layer Effects, Vector Shapes are ideal for quickly creating web page buttons and similar items



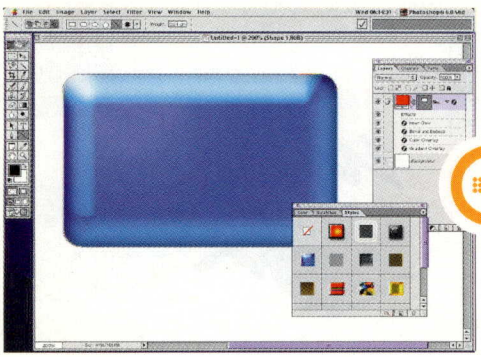


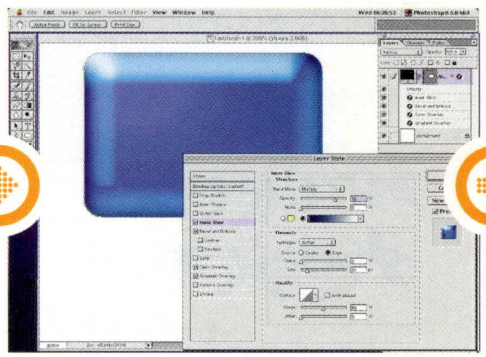


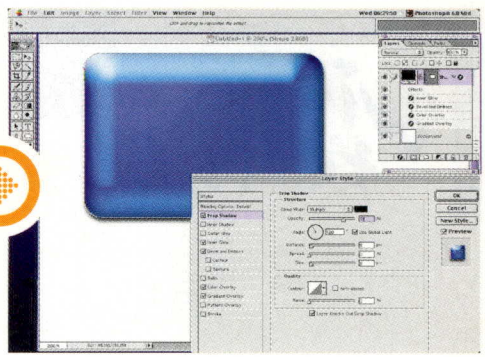
01 Photoshop comes with a handful of shapes that you can use right away. Create a new document and click on the Custom Shape Tool in the Toolbar.

02 Notice that the Options bar at the top of the screen contains items relating to Shapes. Select the Rounded Rectangle shape from the Options bar and drag out a shape.

03 In the Layers palette, there is a special type of layer called a Solid Colour layer. Along with it is a Clipping Path containing the shape you made. Double click the Solid Colour icon in the Layer to change its colour.



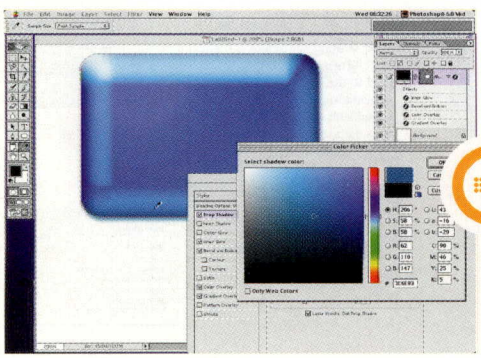


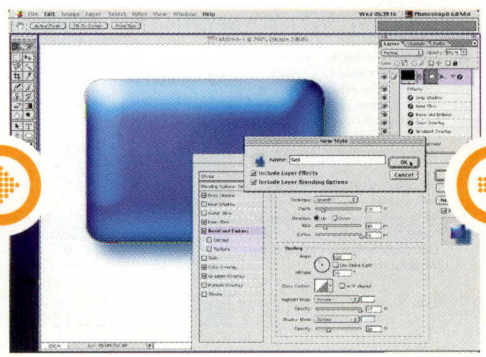


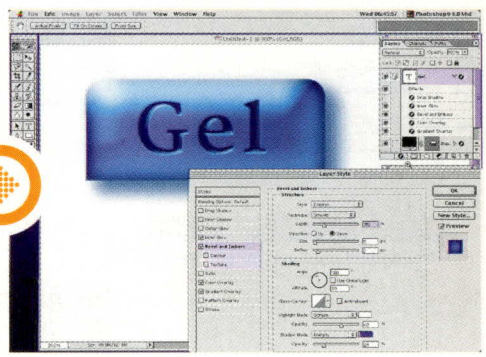
04 An ideal use for shapes is to create web page buttons. Taking our simple shape we can add another new feature, a Layer Style. Open the Styles palette and with the new Layer still selected, click on one of the preset styles – we've gone for Blue Glass.

05 A style is a combination of Layer effects saved as a preset and you can create your own styles and save them for re-use. Double click the word Effects below the Layer to access the Layer Styles dialogue.

06 The button is a bit aqua, so we'll go with that and add a drop shadow. Click the Drop Shadow check box to enable it. We'll change the colour to blue to give the impression that the button is made of transparent gel.







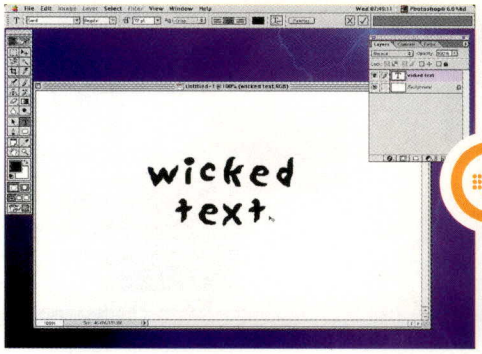
07 Click in the colour swatch in the Drop Shadow section of the dialogue to change the colour. Pick a darkish, de-saturated blue from the button (move your mouse outside the colour picker to use the eye dropper).

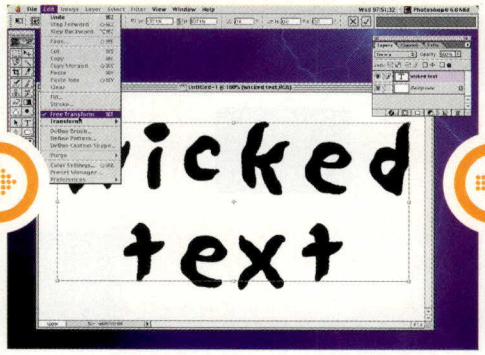
08 By adjusting the Distance, Spread and Size sliders you can get the desired shadow effect. You can go into the other sections, such as Bevel and Emboss, to get the button just right. If you're happy, click the New Style button to name and save it.

09 To make the button into a tab, click the rectangle Shape tool, making sure that in the Option bar the Subtract function is selected. Now when you drag in the Layer you can cut away the button of the other shape, making a rounded tab.

TEXT

Photoshop has come under criticism in the past for its poor text support. However, the program now has great text creation tools and much more besides. Here are a couple of tricks to get you going...





01 In a new document select the Text tool and click on the canvas. Notice that with the latest versions there's no sign of the clumsy text editing dialogue and you can just type directly into your document. Here's some sample text here to demonstrate.

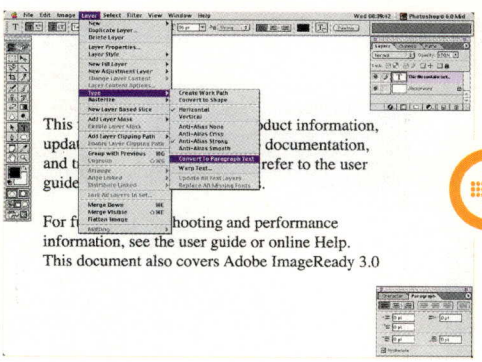
02 To scale the type up or down, you can either enter a new point size in the Option bar or use the Free Transform tool instead. Text is vector-based so scaling it up or down won't degrade it like it would a bitmap image.

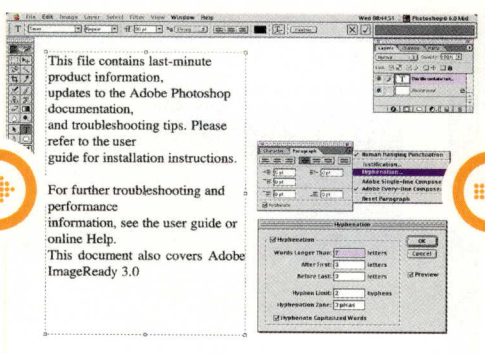
03 Photoshop has a Character palette which you can access from the Windows menu (or use the C-T short cut). Here you can enter point size, and scale text horizontally and vertically, as well as adjust the kerning and the leading.

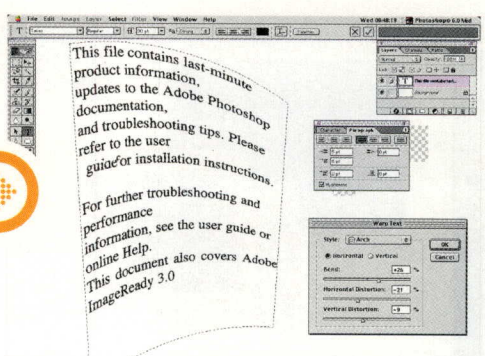
04 In the Options bar there are controls for things like colour and anti-aliasing, but there's also a little button with a letter T above a curved line. Clicking this opens the Warp Text palette. Select Arch from the pop-up menu to distort your text into an arch.

05 The Warp Text tool is capable of some drastic text effects but can also be used more subtly to introduce a little perspective. The Horizontal and Vertical Distortion controls can make the texts appear to tilt up and down, or side to side.

06 There are some extreme settings in Photoshop which you can use to distort text into wild shapes. This can be especially useful for wrapping text around other objects on a page. You can experiment with this for a while...




This file contains last-minute product information, updates to the Adobe Photoshop documentation, and troubleshooting tips. Please refer to the user guide for installation instructions.
For further troubleshooting and performance information, see the user guide or online Help.
This document also covers Adobe ImageReady 3.0


This file contains last-minute product information, updates to the Adobe Photoshop documentation, and troubleshooting tips. Please refer to the user guide for installation instructions.
For further troubleshooting and performance information, see the user guide or online Help.
This document also covers Adobe ImageReady 3.0

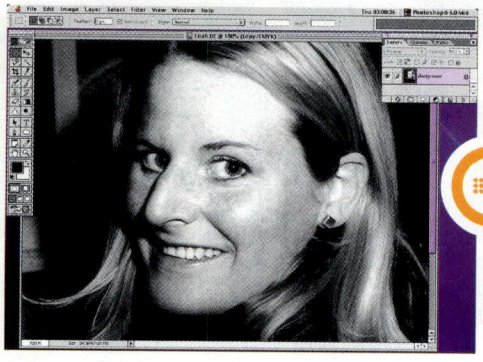
07 You also have better control over blocks of text. Copy and paste some text into a new Photoshop document and open the Paragraph palette. It's still ordinary text, so you'll need to convert it to Paragraph Text in the Layer→Type menu.

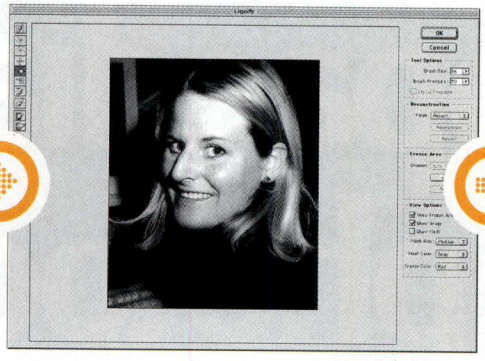
08 A bounding box surrounds the text, enabling you to reshape the text block easily. The text will reflow within the box should you resize it and you can set options for first-line indentation, right and left margin indentation and hyphenation.

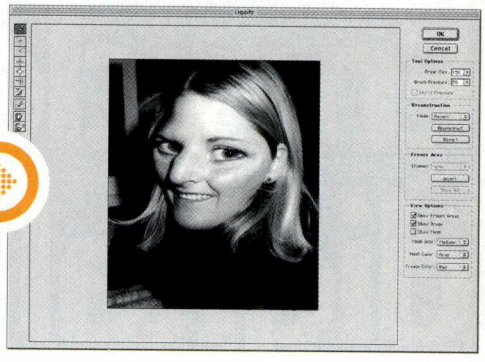
09 The amazing thing about this particular feature in Photoshop is that you can warp the text and still maintain the paragraph controls. The text stays nice and crisp no matter how severely you treat it.

LIQUIFY

The Liquify tool is a great way to modify an image. It enables you to mould and smear pixels as if they were liquid. You can bulge, shrink and warp pictures, or engineer more subtle effects



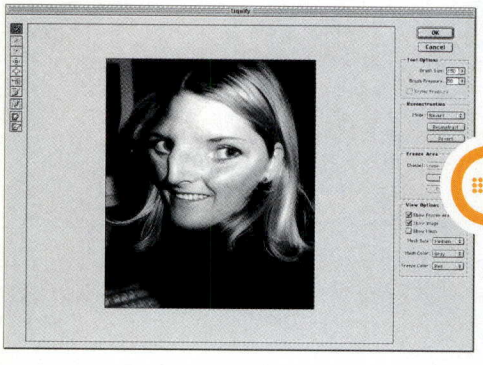


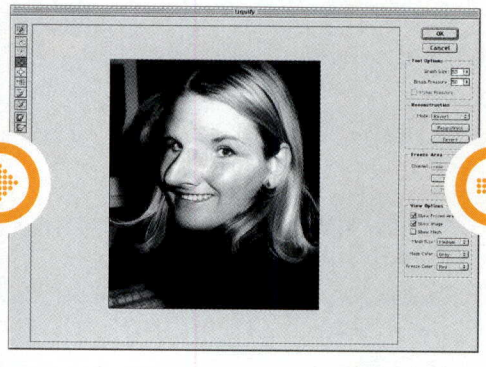


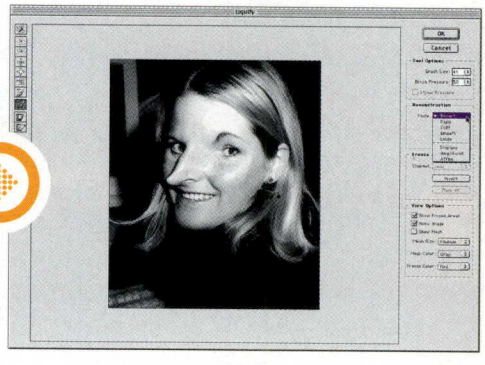
01 Probably the most common use for this tool is to distort a face into a wild caricature. So, take a file that you want to have a little fun with, and get ready for some serious liquidation (you might want to keep the results to yourself!).

02 To activate the tool choose Image➔Liquify. Like the Extract tool, Liquify has its own interface. If you can't zoom into the image, it may end up a bit smaller in the interface than you might expect, but don't worry – you can still manipulate it.

03 The main tool is the Warp brush. It's the first button at the top left of the interface. You can change the brush size by altering the sliders in Tool Options at the right of the screen. Set the brush to max size (150) then drag each of the eyes outwards.



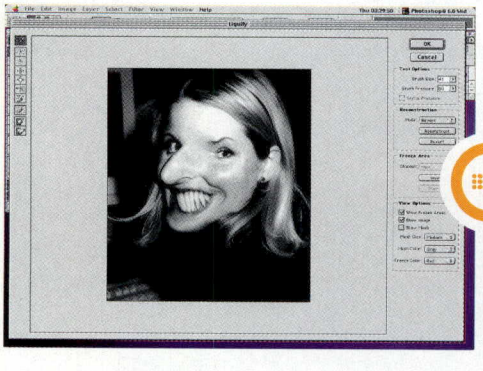


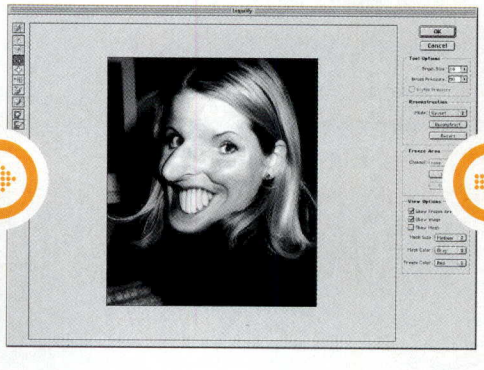


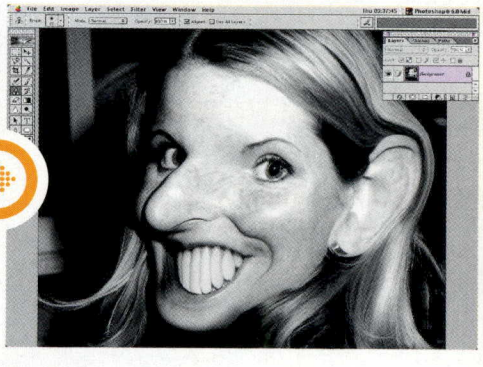
04 Notice that the brush has a soft edge – the effect is strongest at its centre and falls off at the edge. You can use this feature to rebuild areas that are too stretched, so we can fix the eyes by dabbing around them to make them less smeary.

05 The Pucker and Bloat tools can accomplish the same thing, or exaggerate it. Here the Pucker tool has shrunk the eyes. Be careful, though – it's easy to mess up the perspective. We used the Warp tool and a small brush to clean up the mistakes.

06 If you make a mistake there's an undo option. You can also erase work and restore parts of an image with the Reconstruct tool. Make sure the Reconstruction option is set to Revert mode, then paint on the image where you want it to revert.







07 Next we'll work on the teeth. Use the Warp tool again with a medium brush (40ish) and begin by pulling the bottom lip down. You can also widen the mouth at the corners, and enlarge the chin for extra grotesque effects.

08 Notice that the high contrast areas at the tips of the teeth are suffering from the distortion and going fuzzy. We can fix this by pulling down from the centre of the teeth to the tips to recompress the pixels, which will stop them going fuzzy.

09 Of course, the ear can't escape treatment too, so we used the Warp tool to make it a little bigger. Click OK for the effect to be applied to the full image. You may need to use the Clone tool to clean up any over-stretched parts or artefacts.

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Encyclopaedia of digital photography

Get a grip on all the technical terms and digital photography will suddenly become a whole lot easier, in theory at least...

35mm equivalence

The zoom range of a digital camera's lens is often quoted as the equivalent value to a 35mm camera, so a typical wide-angle to short telephoto 3X zoom lens would be 35-105.

A

AE Lock

This button, which you'll find on some cameras, is for Auto Exposure Lock. The way it works is that you can take an exposure reading from a specific part of a complex scene and lock the aperture and shutter speed settings at this point. Then you can recompose and refocus the shot without the exposure setting changing.

Aperture

The main image lens has an iris built into it which, like its human counterpart, opens wider in low lighting conditions to let through more light. The 'speed' of a lens is its F-rating, which measures how much light it lets through at maximum aperture, or when 'wide open'. The smaller the F-number, the faster the lens. A good quality lens might have a rating of F1.8 or lower.

Aperture priority

This exposure mode allows the user to set the required aperture of the lens (for example, a small aperture for greater depth of field), and it adjusts the shutter speed accordingly for the correct exposure.

Artefact

Most often attributed with JPEG compression, artefacts are unwanted attributes that degrade picture quality, like jagged edges on straight lines.

ASA

The American Standards Association was a universal rating for film speed, as used in conventional photography, but has subsequently been replaced by the newer ISO standard (see below).

B

Backlit

A backlit subject – like somebody with their back to the sun – causes exposure problems as their face is in shadow. Fill flash is required for a balanced exposure.

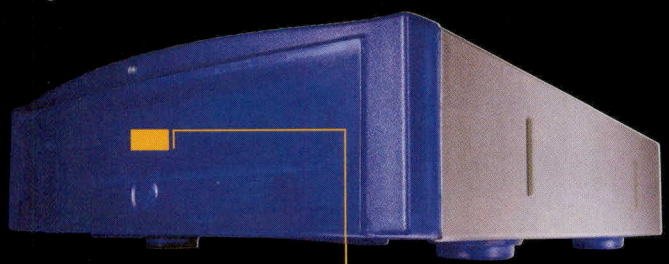
Bitmap

Unlike vector drawn computer images, which are constructed from mathematically formulated lines, digital photos are 'bitmap' images. A bitmap is basically a grid of tiny dots or pixels, each having its own brightness and colour values. The rows and columns of these dots in the bitmap make up the complete image.

C

Cable release

A cable release screws into the finger-operated shutter release on more expensive cameras. It allows you to take a photograph without touching (and jogging) the camera when it's mounted on a tripod – long exposure times can give rise to camera shake. If you don't have a cable release, try using the delayed shutter release timer instead.



Camera shake

Any movement in the camera while the shutter is open causes a blurring of the captured image. The effect becomes more noticeable with longer exposures, or when using long, telephoto lenses, where keeping the camera still becomes critical.

CCD

The main imaging chip in a digital camera is a Charged Coupled Device, responsible for turning the image from the lens into an electrical signal that can then be digitised and stored on the camera's memory card.

CCF

This refers to the Cold Cathode Fluorescent lamp found in most scanners. It enables highly accurate colour rendition, once the optimum operating temperature has been reached (normally requiring around 30 seconds for warm-up).

CD-RW

Unlike CD-R (CD-Recordable) discs, CD-RW stands for Compact Disc-ReWritable. The idea is that you can erase and replace data on the disc, rather than having to burn a whole new disc each time you want to update your photo collection.

Centre-weighted metering

In this metering mode, the camera concentrates on the light levels in the centre of the picture, but takes into account different light levels in the periphery of the frame.

CMOS

CMOS is an abbreviation of Complementary Metal Oxide Semi-conductor. Having light-sensitive properties, CMOS chips can work as image sensor units, while adding a host of other integrated circuit functions for picture processing. This makes them perfect for small digital camera usage, where the complete package might be smaller than a fingernail. However, their relatively poor quality, compared with CCD imaging units, means that they are seldom found in quality consumer and professional digital cameras.

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CMYK

Unlike RGB, printed pictures from an inkjet printer are made up of CMYK – the colours cyan, magenta, yellow and black. More expensive photo printers use six colours, adding photo cyan and photo magenta to the mix.

CompactFlash

This is one of the most popular types of memory card, allowing many photos to be stored on interchangeable, removable media.

Compression

This is the process of shrinking the size of data files. For photos, 'lossy' compression (JPEGs) trades picture quality against file size, whereas 'lossless' compression (compressed TIFFs) retains the quality but produces larger files.

CRT

Conventional computer monitors use Cathode Ray Tubes, similar to television sets but of much higher resolution. They're very good for image editing and digital photography work but their large size takes over a lot of your desk space.

D

Delay timer

This lets you take a photograph after a short delay – usually around 10 to 20 seconds. Apart from enabling you to get into the shot, the delay timer is also useful for taking long exposure photos without touching and jogging the camera (see also cable release).

Depth of field

The distance between the nearest and furthest points in a photographic composition which the camera's lens can keep in focus. Smaller apertures and wider angle lenses both result in greater depth of field.

Digital back

A 'digital back' is available for some up-market conventional cameras, enabling you to clip on a digital storage system that replaces the normal method of capturing images on film, while still making use of the camera's sophisticated camera body and high-quality lens optics.

Digital zoom

This is very much the poor relation of optical zoom, and only used as a last resort to boost the zoom offered by the lens. Digital zoom tries to guess what lies between the pixels that the camera can actually see, and fill in the missing dots. Jagged edges and lack of sharpness are the usual results.

E

Electronic viewfinder (EVF)

These are typically found on more expensive digital cameras, and are a smaller version of the LCD back panel. Low refresh rates can cause problems when panning to follow moving objects.

Exposure compensation

This is an override setting that forces the exposure to be slightly shorter or longer than the camera would set automatically, allowing for forced under- or over-exposure of the scene for artistic effect.

EXIF print

This is a 'tagged image file' system used by many new digital cameras and some of the latest printers. EXIF Print 2.2 allows extra information to be stored in the image file, typically for flash mode, exposure mode (auto, manual, bracket), white balance, exposure time, light source, subject distance, subject area, captured scene type (portrait, landscape, night scene), digital zoom, custom rendered (special effects), contrast, saturation, sharpness and gain control.

F

F-Stop

This is the number that indicates the aperture setting of a lens. A larger F-number denotes a smaller aperture so, a lens that might be fully open at F2.8, would have progressive F-stops of F4, F5.6, F8, F11 and F16. Each successive F-Stop requires a doubling of the exposure time (eg from 1/250th to 1/125th of a second), controlled by the shutter speed, to maintain the same overall exposure.

Fill flash

A low level flash to 'fill in' the shadows in a backlit scene, or to make a foreground object stand out.

Filter

A wide range of filters are available for applying special effects to your photographs, like 'Starburst' or 'Graduated Tint', to simply protecting your lens against scratches.

Focal length

Small focal length lenses produce a wide-angle effect, capturing a greater portion of a scene, while long focal length lenses (telephoto) have a more telescopic effect. Focal lengths for digital cameras are normally quoted the equivalent for a 35mm conventional film camera, with 35mm being wide angle, 50mm as standard and 100mm or more being telephoto.

FTP

File Transfer Protocol is the system for uploading and downloading files, such as digital photos, to and from websites on the internet. Many ISPs offer their own FTP software but it's generally much harder and more fiddly to use than a proper FTP program like WS_FTP Pro.

G

Gadget bag

A soft, protective bag for carrying camera equipment, more often used for conventional 35mm outfits, which include a camera body, flash gun and several lenses.

Gradient fill

A gradient fill applies a tint which begins as one colour and graduates to another. The second might be a transparent area, instead of a second colour, and gradient fills can be radial as well as linear.

H

Hue

The hue of a colour defines its place on the colour spectrum, often given a numerical value in image-editing packages for easy adjustment of colours.

I

Indexed colour

Indexed colour images are made up from a maximum of 256 individual colours and popular examples often found on the web are PNG or GIF files.

ISO

While replacing the older ASA standard, the new International Standards Organization rating works exactly the same way, using exactly the same figures. Therefore an ISO 200 film would be twice as fast as an ISO 100 film, but half the speed of a 400 ISO film. Digital cameras use ISO equivalence for their speed rating setups, often available in the menu systems.

J

JPEG

The Joint Photographic Experts Group is responsible for creating this universally used photo file format. It works with 'lossy compression', meaning you get some image degradation with file size shrinkage (unlike compressed TIFFs), but you can choose the compression level you want on a sliding scale.

L

LCD (camera)

A camera's Liquid Crystal Display is a miniature full colour screen for reviewing or even composing shots, as well as giving a visual display of menu settings.

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WHAT IT IS | DIGITAL CAMERA TECHNICAL TERMS

JARGON:

MEMORY EFFECT
This is a drawback of using NiCAD rechargeable batteries. If they are repeatedly recharged without first being completely discharged, the memory effect causes them to only be useful down to the previous level of charge, making them run out much sooner than expected

SPOT METERING
Exposure settings are based on a single small area of the overall image (normally the centre) and different light levels in the rest of the scene are disregarded

LCD (monitor)

Liquid Crystal Display monitors are amazingly thin compared with conventional CRTs but, in the past, have been let down by hefty price tags and relatively inaccurate colour. New models tend to have much higher picture quality and prices are falling all the time. Good 15-inch LCDs (comparable to a 17-inch CRTs) now start at under £200.

M

Macro

A Macro lens actually magnifies objects in a scene and can typically focus on objects at very close range.

Mask

A mask is an area placed over an image being edited that protects it from any filters or effects being applied. For example, if you wanted to soften the background of a portrait while keeping the subject in sharp focus, you would place the mask over the subject and then apply a softening filter to the whole image. Only the area outside the mask would be softened.

Megapixel

Digital photos are made up from arrays of dots, or pixels, each with their own colour and brightness. A 1-megapixel image contains one million dots, and a 1,600 x 1,200 pixel image would be just under 2 megapixels. The megapixel rating of a camera is the maximum size of image it can capture.

Metering

Choosing the right exposure setting is critical for optimum quality, and metering is the process by which the camera works out this setting. Various different methods can be employed on more up-market cameras, including centre-weighted and spot metering. See also 'TTL'.

Metered manual

This exposure mode allows the photographer to set both the shutter speed and lens aperture, while still taking advantage of the camera's built-in light meter for exposure measurements.

O

Optical zoom

This is the maximum zoom range offered by the lens, without any help from electronics built into the camera (see digital zoom).

P

Predictive focus

Some advanced auto-focus systems track the speed of moving objects, and continue to adjust the focus throughout the exposure.

Pre-focus

If your camera is susceptible to missing the moment due to the time taken for the auto-focus procedure, try switching to manual focus or 'pre-focus' on a specific point before composing and taking the shot.

R

Removable media

Any removable memory card as used in a digital camera, but the term also replies to other forms of removable storage, like CD-ROM discs or floppy disks.

Resolution

In terms of digital cameras, the maximum resolution is the maximum image size that the camera can capture, measured in pixels. In printing, the resolution is a measure of the number of individual dots which the printer can fit into one inch (dpi), quoted both vertically and horizontally.

RGB

All colours are made up from red, green and blue, so devices which transmit light, like televisions, projectors and computer screens work from these primary colours. For reflected light, as in printing, see CMYK.

S

Saturation

The less saturated a colour is, the more grey it has in its composition and the less vivid it appears to the eye. Adjusting the saturation in an image allows you to change the amount of colour while retaining brightness and contrast levels.

Scene modes

Many digital cameras have scene modes such as portrait, sport and landscape. These adjust the exposure for greater depth of field, faster shutter speeds and so on. They're ideal for beginners who want to capture the moment without racking their brains working out the optimum exposure settings.

Shutter priority

This exposure mode lets the photographer set the required shutter speed and then adjusts the lens aperture accordingly for the correct exposure.

Shutter speed

This is the time for which the shutter is open, allowing light to fall on the CCD. When using larger lens aperture settings, or in brighter lighting conditions, faster shutter speeds are needed to prevent over-exposure.

SLR

A Single Lens Reflex camera enables the photographer to compose and focus a shot while looking through the main objective lens of the camera. When taking the photograph, the mirror that deflects light into the viewfinder prism flips up out of the way before the shutter opens. There is therefore a small time delay between pressing the shutter release and the shutter opening.

T

Telephoto lens

These lenses have long focal lengths that produce a telescopic effect for magnifying distant objects and appearing to bring them nearer

TTL metering

The most precise metering system built into cameras is TTL metering, which stands for Through The Lens. Basically, it means that the exposure setting is based on exactly what the camera 'sees'. More advanced cameras offer different modes of TTL metering – see spot and centre-weighted.

U

Unsharp mask

A very useful image-editing filter for sharpening up slightly blurred images, making edges stand out much better without interfering too much with areas of low contrast.

UV filter

Many photographers leave a UV filter on the lens all the time, to protect it against the elements as well as for filtering out UV light which can adversely affect the colour or exposure of outdoor shots.

W

White balance

Different light sources (such as sunshine or artificial tungsten lighting) have different colour temperatures. Even different outdoor scenes can have varying ambient colour temperature. Digital cameras can adjust to this, using 'white balance' to keep the correct colour temperature, so that photos don't look too warm (redish) or cool (blueish).

Wide-angle lens

A wide-angle lens manages to fit much more of any given scene into the captured image, though it also makes objects look further away. Wide angle lenses also provide the photographer with greater depth of field.

Z

Zoom lens

Zoom lenses offer a continually variable focal length between wide-angle and telephoto. A 3x zoom lens would have a telephoto focal length that is three times its wide-angle focal length, for example 40-120mm (see 35mm equivalence). Higher magnification factors indicate a bigger zoom range.

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